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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/684,380	10/15/2003	Minoru Kurosawa	HITA.0446	4476

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EXAMINER
RO, BENTSU

ART UNIT	PAPER NUMBER
2837	

DATE MAILED: 08/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	**Application No.** 10/684,380	**Applicant(s)** KUROSAWA ET AL.
	Examiner Bentsu Ro	**Art Unit** 2837

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 June 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-7,9,12-14 and 17-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *9 and 12-14* is/are allowed.

6)☒ Claim(s) *1,3-7,17 and 18* is/are rejected.

7)☒ Claim(s) *19 and 20* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *15 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

FIRST OFFICE ACTION AFTER RCE

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 3-7, 17, 18 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Dunfield et al US Patent No. 5,254,914.

Claims 1, 3-7, 17, 18 read onto Dunfield et al teaching as follows:

The claims:	**Dunfield et al teaching:**
1. (Currently Amended) A rotation drive control device of a three-phase DC motor, comprising:	Fig. 4 shows a rotation drive control device of a three-phase dc motor; the three phase dc motor is shown as a three phases brushless dc motor 104;
a drive control unit;	Fig. 4 shows a "control software and look up table 126"; the software 126 and the associated control elements altogether constitute a drive control unit;
a three phase DC motor including three phase coils and a rotor,	the brushless dc motor 104 includes three phases Ψ-1, Ψ-2, and Ψ-3; the rotor is not shown; it is noted that all brushless dc motors have a permanent magnet rotor;
wherein the drive control unit sequentially causes a first current flows through through any two of the three phase coils	Fig. 4 further shows a pulse generator 100 for generate a positive current pulse i_1+ and a negative current pulse i_1-; thus, either one or both of the positive

	current pulse and the negative current pulse are "a first current", that sequentially flows through any two of the three phase coils; column 6, lines 31-32 states that "....the phases can be driven as phase pairs..."; column 7, lines 7-8 states that "The same phase pair, Ψ-1 and Ψ-2, is now energized..."; Fig. 4 clearly shows the connection and energization of Ψ-2, and Ψ-3 with Ψ-1 connected to a monitoring circuit via a choosing switch 109;
to detect a polarity of an induced voltage in each de-energized phase of the three phase coils,	Fig. 3B shows induced voltage of un-energized phase, including polarity of the induced voltage;
	it is very important to note that the use of a positive current pulse and a negative current pulse is to determine the polarity of the induced voltage, or otherwise a single pulse can be used;
so as to determine a direction of energization and a corresponding phase coil through which a second current is cause to flow to rotate the rotor,	the whole process is to determine the rotor position at standstill so that the motor can be started to rotate at a desired direction;
	Fig. 7B, step 233 states that "recall sign information, choose phase combination to energize"; the words "choose phase combination to energize" is to start up the motor using a second current;
wherein the drive control unit controls a start up of the three phase DC motor based upon a first determination in connection with the direction of energization and the corresponding phase coil,	same as above;
wherein the rotor does not respond to the first current, and	the positive current pulse and the negative current pulse do not cause the rotor to

	rotate, see column 3, line 38; column 5, line 35; column 6, line 50; column 9, lines 52-53; for examples;
wherein when the drive control unit determines a detected level of the induced voltage of each of said two of the three phase coils is larger than a predetermined level,	Fig. 3B, Fig. 5 (the middle drawing), Fig. 6, and Fig. 8 all show the detected level of the induced voltage in comparison with a reference voltage V-ref;
the drive control unit determines the direction of energization and the corresponding phase coil by using a detected polarity of each of said two of the three phase coils so as to rotate the rotor based upon the direction of energization and the corresponding phase thereof determined.	column 8 between lines 12-24, there is shown a table, this table shows (1) the rotor position, (2) the corresponding sign of Δt, which corresponds to the polarity of energization and (3) the phases to be energized; in Figs. 7A-7B, the steps 200 through 229 determine the direction of energization and the corresponding phase coil by using a detected polarity of each of said two of the three phase coils; step 233 recalls the sign (or polarity) info and choose phase combination; step 235 starts the motor based on the information recalled.
3. (Currently Amended) The rotation drive control device of three phase DC motor according to claim 1, wherein	
the drive control unit includes a comparator or an arithmetic circuit which determines whether a detected level of the induced voltage of each phase of the three phase coils is larger or small than the predetermined level,	Fig. 4 shows a positive current pulse comparator 106 and a voltage reference 108 for determining whether a detected level of the induced voltage of each phase of the three phase coils is larger or small than the voltage reference level;
and registers which retain the results of determination every phases together with the polarity of the induced voltage in each de-energized phase of the three phase coils.	Fig. 4 shows memories 112, 114 and memories 118, 120, 122; it is noted that a memory can be a register, or vice versa.

4. (Currently Amended) The rotation drive control device of three phase DC motor according to claim 3,	
wherein the drive control unit further includes a decoder [which decodes] which decodes outputs of the registers and outputs a signal indicative in connection with the direction of energization and the corresponding phase coil.	the look-up table (LUT) shown 126 in Fig. 4 or the table shown in column 8 is a decoder; the table includes the phases to be energized.
5. (Currently Amended) The rotation drive control device of three phase DC motor according to claim 4, wherein	
the drive control unit further includes a rotation determining unit which compares a previous output of the signal indicative with a present output of the signal indicative so as to determine normal rotation or reverse rotation of the rotor.	Fig. 4 shows the control software 126; Fig. 7B, step 233, the "choose phase combination to energize" is a rotation determining unit; column 7, lines 62-63 states that "...to start the motor in the proper direction."; column 8, line 25 states that "...the rotor will start in the correct direction...".
6.	A method claim similar to but broader than that of apparatus claim 1, explanation should be same as that of claim 1.
7.	Similar to that of claim 5.
17.	The method of claim 17 is the same as motor starting step as shown in Fig. 7B, step 233.
18.	column 7, line 65 through column 8, line 2 states that "...if the magnitude of the time difference for any one of the phases indicates that the position may be

	erroneous, the state selection process will be inhibited and the position detection will be repeated using a different reference voltage level."; this is a confirming process as claimed.

3. In claim 4, line 3, the words "which decodes" are duplicated. One should be deleted.

4. Claims 19 and 20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

5. Claims 9, 12-14 are allowable.

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

7. Any inquiry concerning this communication should be directed to Bentsu Ro at telephone number 571 272-2072.

Bentsu Ro

8/4/2005

Bentsu Ro
Senior Examiner
Art Unit 2837